



Anesthesiology



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■ CLINICAL INVESTIGATIONS

- ◆ **Parental Presence and a Sedative Premedication for Children Undergoing Surgery: A Hierarchical Study** 939

Zeev N. Kain, Linda C. Mayes, Shu-Ming Wang, Lisa A. Caramico, Dawn M. Krivutza, and Maura B. Hofstadter

Parental presence during induction of anesthesia has no additive anxiolytic effects for children who receive a sedative preoperatively. Parents who accompany their sedated children into the operating room, however, are less anxious and more satisfied with the separation process and the overall anesthetic, nursing, and surgical care provided.
- ◆ **The Effect of Anesthetic Technique on Postoperative Outcomes in Hip Fracture Repair** 947

Dorene A. O'Hara, Amy Duff, Jesse A. Berlin, Roy M. Poses, Valerie A. Lawrence, Elizabeth C. Huber, Helaine Noveck, Brian L. Strom, and Jeffrey L. Carson

The authors evaluated the impact of anesthetic choice on 6,206 patients undergoing general anesthesia and on 3,219 patients undergoing regional anesthesia for hip fracture repair and found no difference in postoperative mortality and morbidity.
- ◆ **Cost-effectiveness of Prophylactic Antiemetic Therapy with Ondansetron, Droperidol, or Placebo** 958

Robert P. Hill, David A. Lubarsky, Barbara Phillips-Bute, Jennifer T. Fortney, Mary R. Creed, Peter S. A. Glass, and Tong J. Gan

It is less costly to administer a prophylactic antiemetic to patients at high risk for postoperative nausea and vomiting undergoing day surgery compared with placebo, followed by rescue antiemetic therapy, if needed.
- ◆ **α_2 -Adrenergic Receptors in Human Dorsal Root Ganglia: Predominance of α_{2b} and α_{2c} Subtype mRNAs** 968

Rita R. S. Ongjoco, Charlene D. Richardson, Xiaowen L. Rudner, Mark Stafford-Smith, and Debra A. Schwinn

The authors evaluated α_2 AR subtype expression in human dorsal root ganglia using competitive RT-PCR and found that α_{2b} and α_{2c} subtype mRNAs predominate.

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The Incidence and Mechanisms of Pharyngeal and Upper Esophageal Dysfunction in Partially Paralyzed Humans: Pharyngeal Videoradiography and Simultaneous Manometry after Atracurium

977

Eva Sundman, Hanne Witt, Rolf Olsson, Olle Ekberg, Richard Kuylenstierna, and Lars I. Eriksson

Partial paralysis causes delayed initiation of the swallowing reflex and impaired pharyngeal muscle function and coordination, leading to a four- to fivefold increase in the incidence of pharyngeal dysfunction and penetration of bolus to the larynx.

Reliability of Pharmacodynamic Analysis by Logistic Regression: A Computer Simulation Study

985

Wei Lu and James M. Bailey

The error in estimation of C50 in typical anesthesia studies may be as high as 30–40%, and the estimation of the slope of the concentration–effect relation may be much higher, when data from multiple patients is naively pooled.

Pharmacokinetics and Arteriovenous Differences in Clevidipine Concentration following a Short- and a Long-term Intravenous Infusion in Healthy Volunteers

993

Hans Ericsson, Ulf Bredberg, Ulf Eriksson, Åse Jolin-Mellgård, Margareta Nordlander, and Carl G. Regårdh

Clevidipine is a high-clearance drug with a small volume of distribution, resulting in short half-lives in healthy subjects. During ongoing infusion, the arterial clevidipine concentration remains approximately twice as high as the venous level after attainment of steady states in the two blood pools.

◇ A Dose-ranging Study of Rapacuronium in Pediatric Patients

1002

George H. Meakin, Olli A. Meretoja, Johann Motsch, Tomi Taivainen, Kari Wirtavuori, Rüdiger Schönstedt, Russell Perkins, and Anthony McCluskey

Rapacuronium can produce satisfactory conditions for intubation at 60 s in infants and children when given in doses of 1.5 and 2.0 mg/kg, respectively. It is an effective and well-tolerated short-duration nondepolarizing muscle relaxant in infants and children.

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Maximum Tolerated Dose of Nalmefene in Patients Receiving Epidural Fentanyl and Dilute Bupivacaine for Postoperative Analgesia

1010

Thomas B. Dougherty, Vivian H. Porche, and Peter F. Thall

The maximum tolerated dose of nalmefene was determined by the recently developed modified continuous reassessment method to be 0.50 $\mu\text{g/kg}$ in patients receiving epidural fentanyl and 0.075% bupivacaine for postoperative analgesia.

Investigation of Effective Anesthesia Induction Doses Using a Wide Range of Infusion Rates with Undiluted and Diluted Propofol

1017

Tomiei Kazama, Kazuyuki Ikeda, Koji Morita, Mutsuhito Kikura, Takehiko Ikeda, Tadayoshi Kurita, and Shigehito Sato

There is a lag between the injection of propofol and loss of consciousness, and, depending on the rate of administration, excess drug may be present in the peripheral and central circulation when induction is complete. This study evaluated the effects of different infusion rates and concentrations of propofol on time to unconsciousness and hemodynamic side effects. The relation between induction dose and infusion rate is complex, but hypotension could be attenuated by the use of diluted propofol.

◇ Memory Formation during General Anesthesia for Emergency Cesarean Sections

1029

Gitta H. Lubke, Chantal Kersters, Raphael Y. Gershon, and Peter S. Sebel

Explicit and implicit memory was investigated in patients undergoing emergency cesarean sections. Hypnotic state was monitored using the bispectral index (BIS) during word presentation. Memory performance was tested with a word-stem completion test using the process dissociation procedure.

Prophylactic Ondansetron in Prevention of Postoperative Nausea and Vomiting following Pediatric Strabismus Surgery: A Dose-Response Study

1035

Senthilkumar Sadhasivam, Dilip Shende, and Rashmi Madan

The clinical usefulness of prophylactic ondansetron in the prevention of postoperative nausea and vomiting in children after strabismus repair was evaluated in this dose-response study using therapeutic and true outcome measures. Prophylactic ondansetron at a dose of 75 $\mu\text{g/kg}$ is as effective as 150 $\mu\text{g/kg}$, and its routine use is justified in solving this "big little" problem.

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Plasma Concentration of Fentanyl with Xenon to Block Somatic and Hemodynamic Responses to Surgical Incision 1043

Yoshinori Nakata, Takahisa Goto, Hayato Saito, Yoshiki Ishiguro, Katsuo Terui, Hiromasa Kawakami, Yoshihiko Tsuruta, Yoshinari Niimi, and Shigeo Morita

The concentration of fentanyl to prevent a somatic response to skin incision in 50% of patients in the presence of 0.7 minimum alveolar concentration xenon was 0.72 ± 0.07 ng/ml, and to prevent a hemodynamic response was 0.94 ± 0.06 ng/ml (mean \pm SD).

Both EMLA and Placebo Cream Reduced Pain during Extracorporeal Piezoelectric Shock Wave Lithotripsy with the Piezolith 2300 1049

Thara Tritrakarn, Jariya Lertakyamane, Pisamorn Koompong, Suchai Soontrapa, Pradit Somprakit, Anupan Tantiwong, and Sunee Jittapapai

Eutectic mixture of local anesthetic and placebo creams under occlusive dressing functioned as a coupling medium and reduced pain during extracorporeal piezoelectric shock wave lithotripsy.

■ LABORATORY INVESTIGATIONS

◆ Contrasting Synaptic Actions of the Inhalational General Anesthetics Isoflurane and Xenon 1055

Sara L. M. de Sousa, Robert Dickinson, William R. Lieb, and Nicholas P. Franks

Isoflurane and xenon have very different effects on γ -aminobutyric acid-mediated (GABAergic) and glutamatergic synaptic transmission. Isoflurane affects both inhibitory and excitatory synapses; xenon only affects the *N*-methyl-D-aspartate receptor component of excitatory synapses.

Effects of Intravenous Anesthetic Agents on Glutamate Release: A Role for GABA_A Receptor-Mediated Inhibition 1067

Donal J. Buggy, Beverley Nicol, David J. Rowbotham, and David G. Lambert

Thiopental, propofol and ketamine inhibit K^+ -evoked glutamate release. The inhibition produced by thiopental and propofol is reversed by bicuculline, suggesting an interaction of GABAergic and glutamatergic transmission in anesthesia.

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- ◇ **Mechanisms of Nonimmunological Histamine and Tryptase Release from Human Cutaneous Mast Cells** **1074**
Mette Veien, Fania Szlam, Jeannine T. Holden, Koji Yamaguchi, Donald D. Denson, and Jerrold H. Levy
 Tryptase and histamine both are released during nonimmunologic cutaneous mast cell activation.
- Attenuation of Ascending Nociceptive Signals to the Rostroventromedial Medulla Induced by a Novel α_2 -Adrenoceptor Agonist, MPV-2426, following Intrathecal Application in Neuropathic Rats** **1082**
Antti Pertovaara and Hong Wei
 A novel α_2 -adrenoceptor agonist, MPV-2426, attenuated ascending nociceptive signals in neuropathic and non-neuropathic animals as a result of action on spinal α_2 adrenoceptors. The antinociceptive effect of MPV-2426 was spatially more restricted than that of dexmedetomidine, the reference α_2 adrenoceptor agonist of this study.
- Volatile Anesthetics Differentially Affect Immunostimulated Expression of Inducible Nitric Oxide Synthase: Role of Intracellular Calcium** **1093**
Klaus Tschaikowsky, Jörg Ritter, Klaus Schröppel, and Matthias Kühn
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- Direct Coronary Vasomotor Effects of Sevoflurane and Desflurane in *In Situ* Canine Hearts** **1103**
George J. Crystal, Xiping Zhou, Juozas Gurevicius, Edward A. Czinn, M. Ramez Salem, Syed Alam, Agnieszka Piotrowski, and Guochang Hu
 Intracoronary administration of sevoflurane and desflurane have comparable coronary vasodilative effect in in situ canine hearts. The ATP-sensitive potassium channels play a prominent role in these effects.

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Comparison of Volatile Anesthetic Effects on Actin-Myosin Cross-bridge Cycling in Neonatal *versus* Adult Cardiac Muscle

1114

*Yedatore S. Prakash, Mark J. Cody, James D. Hannon,
Philippe R. Housmans, and Gary C. Sieck*

The greater sensitivity of the neonatal rat myocardium to volatile anesthetics is found to be partly attributable to an interference with actin-myosin cross-bridge interactions, the effects being more pronounced with halothane, compared with sevoflurane.

Antiallodynic Effect of Intrathecal Gabapentin and Its Interaction with Clonidine in a Rat Model of Postoperative Pain

1126

Jen-Kun Cheng, Hui-Lin Pan, and James C. Eisenach

Intrathecal gabapentin produces dose-dependent antiallodynia in a rat model of postoperative hypersensitivity and interacts synergistically with intrathecal clonidine in this action. Unlike studies in cell culture, intrathecal gabapentin *in vivo* does not depend on L-amino acid transporters for its effect.

Mechanisms of Ventricular Arrhythmias Induced by Myocardial Contusion: A High-resolution Mapping Study in Left Ventricular Rabbit Heart

1132

*Emmanuelle Robert, Jean E. de La Coussaye, Antoine G. M. Aya,
Jean-Pierre Bertinchant, Anne Polge, Pascale Fabbro-Péray,
Christine Pignodel, and Jean-Jacques Eledjam*

Direct myocardial contusion of isolated rabbit heart is responsible for arrhythmia. The main mechanism of arrhythmia is based on reentrant circuit around a fixed obstacle induced by the impact.

Subunit-dependent Inhibition of Human Neuronal Nicotinic Acetylcholine Receptors and Other Ligand-gated Ion Channels by Dissociative Anesthetics Ketamine and Dizocilpine

1144

Tomohiro Yamakura, Laura E. Chavez-Noriega, and R. Adron Harris

Human neuronal nicotinic acetylcholine receptors expressed in *Xenopus* oocytes are inhibited by anesthetic concentrations of dissociative anesthetics ketamine and dizocilpine in a subunit-dependent manner.

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Yasuo Tsutsumi, Shuzo Oshita, Hiroshi Kitahata, Yasuhiro Kuroda, Takashi Kawano, and Yutaka Nakaya

Thiamylal inhibits the adenosine triphosphate-sensitive potassium channel activities without affecting channel conductances in cell-attached and inside-out patch-clamp configurations in single rat myocytes during simulated ischemia.

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Modeling the Uncertainty of Surgical Procedure Times: Comparison of Log-normal and Normal Models 1160

David P. Strum, Jerrold H. May, and Luis G. Vargas

It is shown empirically that the log-normal distribution is superior to the normal for estimating surgical procedure times and current reasons goodness-of-fit tests might reject the log-normal model when, in fact, it should be retained.

■ SPECIAL ARTICLE

◇ Practice Advisory for the Prevention of Perioperative Peripheral Neuropathies: A Report by the American Society of Anesthesiologists Task Force on Prevention of Perioperative Peripheral Neuropathies 1168

The American Society of Anesthesiologists present a practice advisory for the prevention of perioperative peripheral neuropathies.

■ CLINICAL CONCEPTS AND COMMENTARY

Real-time Intraoperative Monitoring of Myocardial Ischemia in Noncardiac Surgery 1183

Lee A. Fleisher

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